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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patent Application

Applicant(s): Bauer et al.
Case: 9-1
Serial No.: 09/783,191
Filing Date: February 14, 2001
Group: 2642
Examiner: William J. Deane, Jr.

I hereby certify that this paper is being deposited on this date with the U.S. Postal Service as first class mail addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450
Signature: Linda Sanchez Date: October 16, 2003

Title: Method and Apparatus for Dynamically Allocating Bandwidth Utilization in a Packet Telephony System

APPEAL BRIEF

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Applicants hereby appeal the final rejection dated May 20, 2003, of claims 1 through 41 of the above-identified patent application.

REAL PARTY IN INTEREST

The present application was initially assigned to Lucent Technologies Inc., as evidenced by assignments recorded on June 11, 2002 in the United States Patent and Trademark Office at Reel 012986, Frame 0073 and on August 13, 1999 in the United States Patent and Trademark Office at Reel 010174, Frame 0783. The application was thereafter assigned to Avaya Technology Corp., as evidenced by an assignment recorded on March 26, 2002 in the United States Patent and Trademark Office at Reel 012702, Frame 0533. The assignee, Avaya Technology Corp., is the real party in interest.

RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences.

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STATUS OF CLAIMS

Claims 1 through 41 are pending in the above-identified patent application. Claims 1, 7-10, (16), 17-19, 27, and 35-41 remain rejected under 35 U.S.C. § 103(a) as being unpatentable over Sharma et al. (U.S. Patent No. 5,546,395), claims 2-5, 11-14, 20-25, and 28-34 remain rejected under 35 U.S.C. § 103(a) as being unpatentable over Sharma et al. in view of Javitt (U.S. Patent No. 5,926,483), and claims 6, 15, 20, 24, 28, and 32 remain rejected under 35 U.S.C. § 103(a) as being unpatentable over Sharma et al. in view of Lynn (U.S. Patent No. 5,070,527).

STATUS OF AMENDMENTS

There have been no amendments filed subsequent to the final rejection.

SUMMARY OF INVENTION

The present invention is directed to a network monitoring agent that monitors network conditions, such as traffic volume, and determines when to dynamically adjust the encoding scheme for one or more connections (page 5, line 13, to page 6, line 19). The network monitoring agent can select an encoding standard based on, for example, current network traffic volume, network error characteristics, time of day or day of week (page 3, lines 17-27). In the illustrative network traffic implementation, an encoding standard that provides a lower degree of compression and a higher quality level is selected at times of lighter network traffic. Likewise, as network traffic increases, an encoding standard that provides a higher degree of compression, although at a lower quality level, is selected in order to maximize the network utilization (page 10, line 17, to page 11, line 27; page 12, line 15, to page 13, line 24).

ISSUES PRESENTED FOR REVIEW

i. Whether claims 7-10, 17-19, 27, and 35-41 are properly rejected under 35 U.S.C. § 103(a) as being unpatentable over Sharma et al.;

ii. Whether claims 2-5, 11-14, 20-25, and 28-34 are properly rejected under 35 U.S.C. § 103(a) as being unpatentable over Sharma et al. in view of Javitt; and

iii. Whether claims 6, 15, 20, 24, 28, and 32 are properly rejected under 35 U.S.C. § 103(a) as being unpatentable over Sharma et al. in view of Lynn.

GROUPING OF CLAIMS

The rejected claims do not stand and fall together. More particularly, for the reasons given below, Applicants believe that each of the dependent claims 5/14/23/31 and 7/16/25/33 provide independent bases for patentability apart from the rejected independent claims.

ARGUMENT

Independent Claims 1, 10, 19, 27 and 35

Claims 1, 10, 19, 27, and 35 are rejected under 35 U.S.C. § 102(b) as being anticipated by Sharma et al. In particular, the Examiner asserts that Sharma et al. teaches "a method for dynamically adjusting the bandwidth (Col. 1, line 67- Col. 2, line 4) comprising the steps of selecting an encoding scheme note compressions scheme (Col. 1, lines 52- 57 and Col. 2, lines 21- 24), monitoring one or more conditions on the network (inherent) and selecting a new encoding scheme (Col. 2, lines 21- 22)."

Applicants note that Sharma is directed to a voice over data modem that simultaneously transmits voice and data to a remote site. The voice over data function dynamically allocates bandwidth depending on the "demands of the voice grade digitized signal and the modulation speed of the communication link between the two sites." Col. 1, line 65, to Col. 2, line 4. Sharma is limited to bandwidth allocation for a single communications connection, or link, between two sites for a single application, namely, a voice compression algorithm. See, e.g., Abstract and Title (Dynamic Selection of Compression Rate for a Voice Compression Algorithm in a Voice Over Data Modem).

Independent claims 1, 10, 19 and 27 emphasize that the selection of an encoding scheme is application dependent. Thus, Sharma does not disclose or suggest "selecting at least one encoding scheme for at least one of said connections during a call set-up phase based upon encoding requirements of said application associated with said at least one connection, each of said applications having a different encoding requirement," as required by independent Claims 1, 10, 19, and 27.

Similarly, claim 35, requires the step of "establishing said connection, wherein said connection has a plurality of call segments between said calling party and said application, each of said call segments having a different encoding requirement; and selecting an encoding scheme for each of said call segments based on said corresponding encoding requirement."

Sharma is limited to bandwidth allocation for a single communications connection, or link, between two sites for a single application, namely, a voice compression algorithm. See, e.g., Abstract and Title (Dynamic Selection of Compression Rate for a Voice Compression Algorithm in a Voice Over Data Modem). Sharma does not disclose or suggest that each connection has a plurality of call segments each having a different encoding requirement; and that an encoding scheme is selected for each of the call segments based on the corresponding encoding requirement, as required by claim 35.

Additional Cited References

Javitt was cited by the Examiner in rejecting Claims 2-5, 11-14, 20-25, and 28-34 for its disclosure that Javitt teaches the "monitoring of traffic." Javitt is directed to communication systems providing compression of voice and image communications. Javitt does not disclose or suggest selecting a different encoding scheme based on encoding requirements of a plurality of applications or call segments, as required by each of the independent claims of the present application.

Lynn was cited by the Examiner in rejecting Claim 6, 15, 20, 24, 28, and 32 for its disclosure that Lynn teaches a "predetermined time threshold." Lynn is directed to "an audio compression system wherein the compression threshold may be adjusted to a calibrated level. The audio compression system is utilizable in a receiver system wherein an audio input signal received by the receiver system via a communications channel is applied to conditioning circuitry. The conditioning circuitry, in turn, provides a conditioned input signal to an acoustic transducer element for generating a corresponding audio output signal." See, Abstract. Lynn does not disclose or suggest selecting a different encoding scheme based on encoding requirements of a plurality of applications or call segments, as required by each of the independent claims of the present application.

Conclusion

The rejections of the independent claims under section 103 in view of Sharma et al., Javitt, and Lynn, alone or in any combination, are therefore believed to be improper and should be withdrawn.

Dependent Claims

Claims 5/14/23/31 and 7/16/25/33 specify a number of limitations providing additional bases for patentability. Specifically, the Examiner rejected claims 5, 14, 23, 25, 31, and 33 under 35

U.S.C. § 103(a) as being unpatentable over Sharma et al. in view of Javitt and rejected claims 7 (and 16) under 35 U.S.C. § 102(b) as being anticipated by Sharma et al. Claims 5/14/23/31 require that said one or more conditions include a predefined network error characteristic and an encoding scheme is selected that performs well under the observed network error characteristic. Claims 7/16/25/33 require an encoding scheme (that) is independently selected for each half-circuit associated with said at least one of connections. Regarding claims 25 and 33, the Examiner asserts that Javitt teaches the "monitoring of traffic." The Examiner did not provide details on the rejection of claim 31.

Regarding claims 5, 14, and 23, the Examiner asserts that it would have been obvious to one of ordinary skill in the art to have selected an encoding scheme that performs well under the observed network characteristics. Applicants maintain, however, that encoding schemes are typically selected based on the available bandwidth. Although encoding schemes are sometimes selected based on their performance for accommodating the error levels of a particular type of communication network, the selection is typically done in a static fashion, i.e., it does not change as network conditions change. Thus, it is not typical to dynamically select an encoding scheme that performs well under observed network conditions, as required by claims 5, 14, 23, and 31.

Regarding claims 7 and 16, the Examiner asserts that the limitation is inherent. Applicants note that the limitation of wherein an encoding scheme is independently selected for each half-circuit associated with said at least one of connections is not inherent in claim 1. Claim 1 is directed to applications communicating with an endpoint over a single connection. The connection, however, can be comprised of two half-circuits. Claims 7/16/25/33 are directed to independently selecting an encoding scheme for each half-circuit. Applicants also note that the Examiner's comments regarding claims 25 and 33 do not appear to be directed to these claims.

The remaining rejected dependent claims are believed allowable for at least the reasons identified above with respect to the independent claims.

The attention of the Examiner and the Appeal Board to this matter is appreciated.

Respectfully,

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Date: October 16, 2003

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APPENDIX

1. A method for dynamically adjusting the bandwidth utilized by a plurality of applications, each of said applications communicating with an endpoint over a connection in a network, said method comprising the steps of:

selecting at least one encoding scheme for at least one of said connections during a call set-up phase based upon an encoding requirement of said application associated with said at least one connection, each of said applications having a different encoding requirement;

monitoring one or more conditions on said network during said at least one connection; and

selecting a new encoding scheme for said at least one connection if one or more conditions have occurred.

2. The method of claim 1, wherein said one or more conditions include a predefined network traffic level.

3. The method of claim 2, wherein an encoding standard that provides a lower degree of compression is selected at times of lighter network traffic.

4. The method of claim 2, wherein an encoding standard that provides a higher degree of compression is selected as network traffic increases.

5. The method of claim 1, wherein said one or more conditions include a predefined network error characteristic and an encoding scheme is selected that performs well under the observed network error characteristic.

6. The method of claim 1, wherein said one or more conditions include a predefined time period.

7. The method of claim 1, wherein an encoding scheme is independently selected for each half-circuit associated with said at least one of connections.

8. The method of claim 1, further comprising the step of notifying at least one of the devices associated with a connection of said change in the encoding scheme.

9. The method of claim 8, further comprising the step of inserting a notification in a packet header indicating that subsequent packets will be encoded with a different specified encoding algorithm.

10. A system for dynamically adjusting the bandwidth utilized by a plurality of applications, each of said applications communicating with an endpoint over a connection in a network, said system comprising:

a memory for storing computer-readable code; and

a processor operatively coupled to said memory, said processor configured to:

select at least one encoding scheme for at least one of said connections during a call set-up phase based upon an encoding requirement of said application associated with said at least one connection, each of said applications having a different encoding requirement;

monitor one or more conditions on said network during said at least one connection; and

select a new encoding scheme for said at least one connection if one or more conditions have occurred.

11. The system of claim 10, wherein said one or more conditions include a predefined network traffic level.

12. The system of claim 11, wherein an encoding standard that provides a lower degree of compression is selected at times of lighter network traffic.

13. The system of claim 11, wherein an encoding standard that provides a higher degree of compression is selected as network traffic increases.

14. The system of claim 10, wherein said one or more conditions include a predefined network error characteristic and an encoding scheme is selected that performs well under the observed network error characteristic.

15. The system of claim 10, wherein said one or more conditions include a predefined time period.

16. The system of claim 10, wherein an encoding scheme is independently selected for each half-circuit associated with said connection.

17. The system of claim 10, wherein said processor is further configured to notify at least one of the devices associated with a connection of said change in the encoding scheme.

18. The system of claim 17, wherein said processor is further configured to insert a notification in a packet header indicating that subsequent packets will be encoded with a different specified encoding algorithm.

19. A method for dynamically adjusting the bandwidth utilized by a plurality of applications, each of said applications communicating with an endpoint over a connection in a network, said method comprising the steps of:

receiving an encoding scheme indication for at least one of said connections during a call set-up phase based upon an encoding requirement of said application associated with said at least one connection, each of said applications having a different encoding requirement;

monitoring for an indication of a new encoding scheme for said at least one connection; and

decoding subsequent data with said new encoding scheme if said monitoring step detects a change in said encoding scheme.

20. The method of claim 19, wherein said indication is received if a network traffic level exceeds a predefined threshold.

21. The method of claim 20, wherein an encoding standard that provides a lower degree of compression is selected at times of lighter network traffic.

22. The method of claim 20, wherein an encoding standard that provides a higher degree of compression is selected as network traffic increases.

23. The method of claim 19, wherein said indication is received if a predefined network error characteristic is detected and an encoding scheme is selected that performs well under the observed network error characteristic.

24. The method of claim 19, wherein said indication is received for a predefined time period.

25. The method of claim 19, wherein an encoding scheme is independently selected for each half-circuit associated with said connection.

26. The method of claim 25, wherein said monitoring step evaluates a packet header for a notification indicating that subsequent packets will be encoded with a different specified encoding algorithm.

27. A system for dynamically adjusting the bandwidth utilized by a plurality of applications, each of said applications communicating with an endpoint over a connection in a network, said system comprising:

a memory for storing computer-readable code; and

a processor operatively coupled to said memory, said processor configured to:

receive an encoding scheme indication for at least one of said connections during a call set-up phase based upon an encoding requirement of said application associated with said at least one connection, each of said applications having a different encoding requirement;

monitor for an indication of a new encoding scheme for said at least one of connections; and

decode subsequent data with said new encoding scheme if said monitoring step detects a change in said encoding scheme.

28. The system of claim 27, wherein said indication is received if a network traffic level exceeds a predefined threshold.

29. The system of claim 28, wherein an encoding standard that provides a lower degree of compression is selected at times of lighter network traffic.

30. The system of claim 28, wherein an encoding standard that provides a higher degree of compression is selected as network traffic increases.

31. The system of claim 27, wherein said indication is received if a predefined network error characteristic is detected.

32. The system of claim 27, wherein said indication is received for a predefined time period.

33. The system of claim 27, wherein an encoding scheme is independently selected for each half-circuit associated with said connection.

34. The system of claim 27, wherein said monitoring step evaluates a packet header for a notification indicating that subsequent packets will be encoded with a different specified encoding algorithm.

35. A method for encoding a connection between a calling party and an application in a network, said system comprising the steps of:

establishing said connection, wherein said connection has a plurality of call segments between said calling party and said application, each of said call segments having a different encoding requirement; and

selecting an encoding scheme for each of said call segments based on said corresponding encoding requirement.

36. The method of claim 35, further comprising the step of adjusting the encoding scheme selected for one or more of said call segments over time in response to the current needs of a given transaction being performed by said application.

37. The method of claim 35, wherein said application is a voice mail application and said selected encoding scheme is selected to record messages in a compressed format.

38. The method of claim 35, wherein said application is an interactive voice response (IVR) application and said selected encoding scheme provides improved quality for the calling party to IVR half-circuit when the IVR is performing speech recognition.

39. The method of claim 35, wherein said application is an interactive voice response (IVR) application and said selected encoding scheme provides higher compression for the calling party to IVR half-circuit when the IVR is recording a message.

40. The method of claim 35, wherein said application is a signal processing application and a new encoding scheme is selected for an adjustment to the volume of said connection.

41. The method of claim 35, wherein said application is a signal processing application and a new encoding scheme is selected for adjustment to the speed of said connection.